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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,850	03/30/2004	Chang Jin Ha	LT-0052	2336
34610	7590	07/12/2006	EXAMINER	
FLESHNER & KIM, LLP P.O. BOX 221200 CHANTILLY, VA 20153			HORN, ROBERT WAYNE	
			ART UNIT	PAPER NUMBER

2837

DATE MAILED: 07/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/811,850

**Applicant(s)**

HA, CHANG JIN

**Examiner**

Robert W. Horn

**Art Unit**

2837

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 18-22 is/are allowed.
- 6) ☒ Claim(s) 1-5, 10-13, 17 and 23-29 is/are rejected.
- 7) ☐ Claim(s) 6-9 and 14-16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 23 is rejected under 35 U.S.C. 101 because the claimed invention lacks patentable utility. The claim recites an article including a machine-readable storage medium containing instructions for operating a computer, followed by a set of instructions. The steps result in the output of two selected driving patterns at a predetermined driving pattern. The claim does not specify a utility for the outputting of the patterns.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wahler et al. (U.S. Patent 6,874,327).

Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated Wahler et al. (U.S. Patent 6,874,327).

Regarding claim 11, Wahler et al. teaches in figure 1 an apparatus for controlling a fan drive in a computer system including a cooling fan, comprising:

pulse width modulation (PWM) control signal generation means (106) for adjusting a rotation speed of the cooling fan according to an internal temperature of the computer system, the PWM control signal generation means generating PWM control signals corresponding to steps of first resolution (first resolution, 8-bits, column 2, lines 44-45); and

control means for controlling the PWM control signal generation means, the control means referring to information of steps of second resolution higher than the first resolution (column 2, lines 27-28) to control the PWM control signal generation means to alternately output a plurality of different PWM control signals (column 2, lines 38-43) at a predetermined time ratio (duty ratio, column 1, lines 47-52), the different PWM control signals corresponding to said steps of the first resolution (column 2, lines 56-67).

Claim 23-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Bistline et al. (U.S. Patent 5,249,741).

Regarding claim 23, Bistline et al. discloses in figure 2 an article including a machine-readable storage medium 120 or 255 containing instructions for operating a computer system 105, the instructions, when executed, causing the computer system to:

identify second resolution driving patterns higher than first resolution driving patterns to select one second resolution driving pattern for a device;

select two first resolution driving patterns with a prescribed relationship to the selected second resolution driving pattern from among the first resolution driving patterns; and

output control signals for the device corresponding to the selected two first resolution driving patterns at a predetermined time ratio according to the selected second resolution driving pattern.

The listed instruction steps do not distinguish the claimed invention from the reference because they do not describe any additional structural elements. The reference is capable of performing the steps of identifying, selecting, and outputting.

Claims 24-29 read on the instructions contained on the machine-readable storage medium and uses for the instructions and do not specify that the article (machine-readable medium containing instruction) comprises the device, be it a cooling fan or an illumination device nor generate a driving pattern. Claim 23 also features an apparatus claim with method steps (instructions), which make it difficult to delineate the scope. MPEP 2106 specifies, "Language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the claim. " 2100-8 May 2004. Therefore the additional limitations to the instructions and uses for the instructions are not seen as further limiting to claims. Therefore claims 24-29 are rejected on the same basis as claim 23.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stancil et al. (U.S. Patent 6,601,168) and Blake (U.S. Patent 6,188,189).

Regarding claim 1, Stancil et al. teaches (in figure 2) a computer system comprising:

a cooling fan 34 configured to adjust an internal temperature of the computer system (column 1, 38-44);

a rotation speed control (column 5, line 40 to column 6, line 11) bases first resolution control signals (column 6, lines 12-30).

controller configured to output a combination of first resolution control signals (column 6, lines 17-30).

Stancil et al. teaches "the preferred embodiment has been directed to a fan controller having an analog or linear output to be coupled to the fan. One of ordinary skill in the art will realize the invention is applicable to any signal applied to a fan. For example, the fan controller 26 could implement a pulse width modulated scheme in which fan speed is a function of pulse width or duty cycle. Further, it may be possible to use an alternating current (AC) motor rather than a DC motor to supply mechanical power to the fan, and in this instance, fan speed is dictated according to the frequency of the AC voltage provided for the motor." Blake teaches

a pulse width modulation (PWM) control signal generator configured to control a rotation speed of the cooling fan according to the internal temperature of the computer

system figure (column 1, lines 37-67), wherein the PWM control signal generator is configured to generate PWM control signals (figure 3); and

a controller configured to control the PWM control signal generator to output a combination of different PWM control signals.

Blake teaches the PWM control capable of controlling fan speed roughly linearly related to the duty cycle (column 2, lines 54-55).

Considering the objective evidence, it would have been obvious to someone of ordinary skill in the art of motor control to combine the teachings of Stancil et al. regarding the computer fan speed system, first resolution control signals and suggestion to apply control signals to PWM control, with the teaching of Blake regarding the fan speed control system for an electronic enclosure, controller, PWM generator, and digital control signals, in order to control the fans roughly linearly related to duty cycle, taught by Blake.

Regarding claim 2, Stancil et al. and Blake teach the computer system of claim 1, and wherein the combination of different first resolution PWM control signals is output in a single driving cycle of the fan (figure 4).

Regarding claim 3, Stancil et al. and Blake teach the computer system of claim 2, except for the limitation wherein the driving cycle is 16 milliseconds. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to make the driving cycle 16 milliseconds, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 4, Stancil et al. and Blake teach the computer system of claim 1, and Stancil et al. teaches the limitation wherein the combination of different first resolution PWM control signals are alternate sequential first resolution PWM control signals at a predetermined time ratio (figure 4).

Regarding claim 5, Stancil et al. and Blake teach the computer system of claim 1, except the limitation wherein the PWM control signal generator is configured by hardware, and wherein the controller is configured by software. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to configure the PWM control signal generator as hardware and the controller as software, since the examiner takes Official Notice of the equivalence of hardware and software for their use in the computer related device art and the selection of any of these known equivalents to implement an algorithm would be within the level of ordinary skill in the art.

Regarding claim 10, Stancil et al. and Blake teach the computer system of claim 1, but not the limitation, wherein a period in which said plurality of different PWM control signals of the first resolution are alternately outputted is shorter than a period corresponding to a response speed of the cooling fan. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to optimize the range for the response of the controller vs. the response of the motor, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 223.

Claims 12, 13 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wahler et al. and the examiner's Official Notice.

Regarding claim 12, Wahler et al. teaches the apparatus of claim 11, wherein the PWM control signal generation means is configured by hardware, and wherein the control means is configured by software.

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to configure the PWM control signal generator as hardware and the controller as software, since the examiner takes Official Notice of the equivalence of hardware and software for their use in the computer related device art and the selection of any of these known equivalents to implement an algorithm would be within the level of ordinary skill in the art.

Regarding claim 13, Wahler et al. teaches the apparatus of claim 11, wherein the control means selects one step corresponding to a selected rotation speed of the cooling fan from the information of the steps of the second resolution, refers to the information of the selected step, and controls the PWM control signal generation means (column 2, lines 25-55).

Regarding claim 17, Wahler et al. teaches the apparatus of claim 11, except the limitation wherein a period in which said plurality of different PWM control signals of the first resolution are alternately outputted is shorter than a period corresponding to a response speed of the cooling fan.

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to optimize the range for the response of the controller vs. the

response of the motor, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 223.

***Allowable Subject Matter***

Claims 6-9, and 14-16 would be allowable if properly amended to clear up the dependence on a rejected independent claim.

Claim 18 is allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 18 is allowable for the method for controlling a fan drive in a computer system, comprising:

determining a rotation speed of a cooling fan correlated to control an internal temperature of the computer system;

selecting at least two first resolution PWM control signals corresponding to the determined rotation speed from among the first resolution PWM control signals; and

outputting a combination of said at least two first resolution PWM control signals to control said rotation speed.

Claims 19-22 are allowable as further limiting claim 18.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional references are cited on the form 892. The

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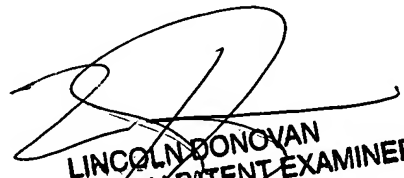
applicant is advised to review the material presented in considering amendment to the claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert W. Horn whose telephone number is 571-272-8591. The examiner can normally be reached on Monday-Friday 7:00-3:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln D. Donovan can be reached on 571-272-2800, ext 33. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

rwh  
July 5, 2006

  
LINCOLN DONOVAN  
SUPERVISORY PATENT EXAMINER